BARTG RTTY DX Contest

WHEN
0200 GMT Saturday March 22nd until 0200 GMT Monday March 24th, 1975

The total Contest period is 48 hours but not more than 30 hours of operation is permitted. Times spent in listening count as operating time. The 18 hour non operating period can be taken at any time during the Contest, but off periods may not be less than 3 hours at a time. Times on and off the air must be summarized on the Log and Score Sheets.

WHO.
There will be separate categories for Multi Operator Stations and SWL's.

BANDS.
3.5, 7.0, 14.0, 21.0 and 28.0 Mhz. Amateur Bands.

STATIONS.
Stations may not be contacted more than once on any Band, but additional contacts may be made with the same Station if a different Band is used.

COUNTRY STATUS.
ARRL COUNTRIES LIST and in addition each W/K and VE/VO Call area will be counted as a separate Country. (But W/K and VE/VO counted once only for QCA).

MESSAGES. Messages exchanged will consist of:
A. Time GMT. This must consist of a full 4 figure group. The use of the expression "Same" or "Same as yours" will not be permitted.
B. RST and Message Number. The message number must consist of a 3 figure group starting with 001 for the first contact made.

POINTS.
A. All two-way RTTY contacts with Stations within one's own Country will earn **TWO** points.
B. All two-way RTTY contacts with Stations outside one's own Country will earn **TEN** points.
C. All Stations will receive a BONUS of **200** Points per Country worked including their own. **NOTE** Any one Country may be counted again if worked on another Band but Continents are counted once only.

SCORING.
A. Two way exchange points times total Countries worked.
B. Total Country points times Bonus points times number of Continents worked.
C. Add (A) and (B) together to obtain your final score.

Sample Score.

Exchange Points (302) x Countries (10) -	3020
Country Points (10) x Bonus Points (200) x Continents (3)	6000
(A) and (B) added together to give a score of	9020

LOGS AND SCORE SHEETS.
Use one Log for each Band and indicate any rest periods. Logs to contain: Date, Time GMT, Message and RST Numbers sent and received and exchange points claimed. **All Logs must be received by May 31st, 1975 to qualify.**

Certificates will be awarded to: The leading Station in each class and to the top Stations in each Continent and each W/K VE/VO Call area. The final positions in the Results Table will be valid for entry in the "World Champion of RTTY" Championship.

Send your Contest Logs to: Ted Double G8CDW,
89 Linden Gardens, ENFIELD,
Middlesex,
England, EN1 4DX

The Judges decision will be final and no correspondence can be entered into in respect of incorrect or late entries.

*** *** ***

Address Correction Requested
RTTY JOURNAL
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RTTY JOURNAL
March 1975
EXCLUSIVELY AMATEUR RADIO TELETYPE
VOLUME 23 No. 3
30 Cents



"Rex" W4ZAG

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Results- 1974 CARTG DX SWEEPSTAKES

CONTEST SUMMARY

The Canadian Amateur Radio Teletype Group - VE3RTT sponsored the 1974 14th Annual RTTY DX Sweepstakes honoring the "Winnipeg Centennial" 1874-1974, and was once again a popular event in the RTTY world. It was held a week earlier in October than is usual on account of CW Contests occupying the weekends in that month, but as propagation was fairly good and deteriorated badly after the contest, it turned out to be a better date.

There were 113 Logs received -- 46 countries contacted, and some of the DXotic calls heard were --

TF3IRA	--	Iceland
HZ1SH	--	Saudi Arabia
PZ1AP	--	Surinam
SV1EC	--	Greece
XW8HJ	--	Laos
GW3IGG	--	Wales

Several contacts were reported with XW8HJ but did not receive a number from him, while others had a completed contact. Many did not hear the African Continent, though there were 5 African stations reported, which made only 25 stations with WAC this time. LU2ESB had the highest score of 3,505,384, this being Henri's final contest effort from that QTH, and will show up soon with a PY call. U.S.A. showed an increase in numbers, probably due to the counting of Canadian and U.S.A. Districts as country multipliers.

The Logs were particularly well presented, one special mention being W5CEG, and on the distaff side we received FB Log from Shyrl - K20YG.

Countries contacted: Alaska, Angola, Argentina, Australia, Austria, Belgium, Bermuda Is., Brazil, Canada, Canal Zone, Chile, Colombia, Czechoslovakia, Denmark, England, France, Geneva, Germany, Greece, Guadeloupe Is., Hawaii, Hungary, Iceland, Ireland, Italy, Japan, Laos, Latvia, Mexico, Monaco, Netherlands, New Zealand, Norway, Peru, R.S.S.R., Saudi Arabia, Sicily, South Africa, Spain, Surinam, Sweden, Switzerland, Tahiti, U.S.A., U.S.S.R., Wales.

Winners and scores follow!

AWARDS

1.	LU2ESB	Argentina	3,505,384	Plaque - "C.A.R.T.G."
2.	KH6AG	Hawaii	2,066,316	Plaque - "RTTY JOURNAL"
3.	K4GMH	U.S.A.	1,769,468	Plaque - "C.A.R.T.G."
4.	W3EKT	U.S.A.	1,600,154	Plaque - "RTTY JOURNAL"
5.	I5WT	Italy	1,271,104	Plaque - A CARTG Member
6.	I6NO	Italy	1,206,038	Plaque - "RTTY JOURNAL"
7.	W4CQI	U.S.A.	1,156,450	Plaque - "C.A.R.T..G."
8.	KZ5BH	Canal Zone	1,093,585	Plaque - "C.A.R.T.G."
9.	K7MNZ	U.S.A.	1,078,492	Plaque - "RTTY JOURNAL"
10.	DL1VR	Germany	1,069,350	Plaque - "C.A.R.T.G."
11.	K4GMH	U.S.A.	1,769,468	Gold Medallion & Ribbon High Score U.S.A. "RTTY JOURNAL"
12.	VE7YB	Canada	496,300	Gold Medallion & Ribbon High Score Canada Canadian Director ARRL
13.	W5NBI	U.S.A.	873,350	Green RTTYer High Score Sidney Burnett Memorial Plaque
14.	W3EKT	U.S.A.	44-80 meter contacts	Plaque - "RTTY JOURNAL
15.	K1LPS/18	Italy	811,100	SWL Printer High Score Plaque - "C.A.R.T.G."
16.	I5CLC	Italy	895,448	Low Power Operation Plaque - "RTTY JOURNAL
17.	DLØTD	Germany	1,089,240	Multi-Operated Station Plaque - "C.A.R.T.G."

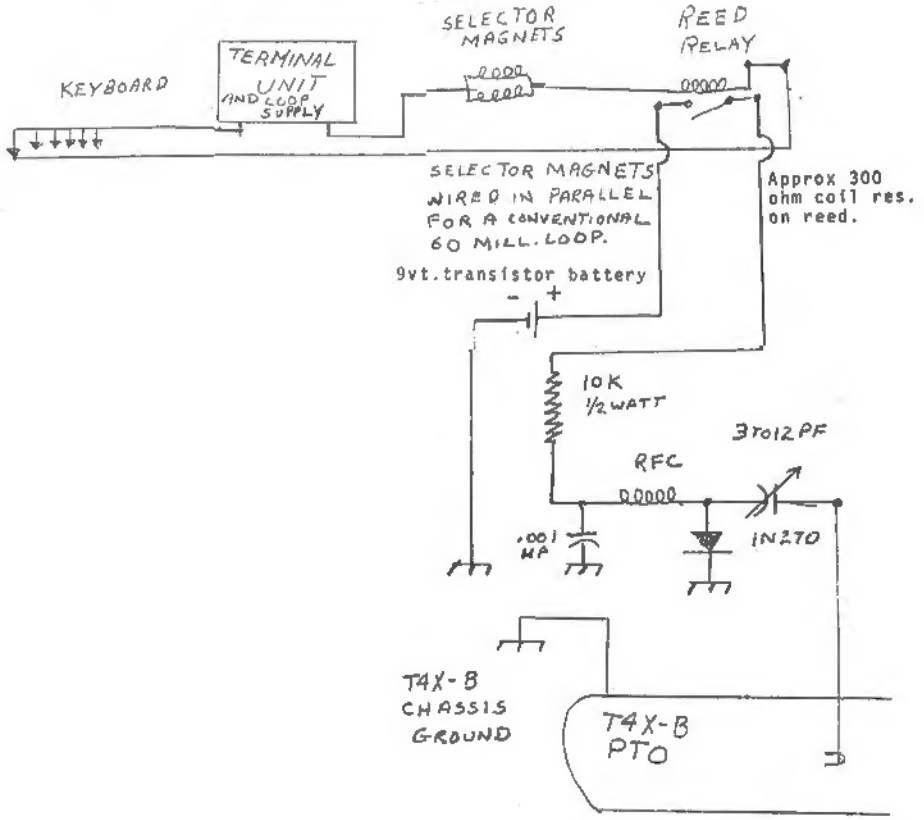
No.	Station	Score			
* 1.	LU2ESB	3,505,384	* 8.	KZ5BH	1,093,585
* 2.	KH6AG	2,066,316	* 9.	K7MNZ	1,078,492
* 3.	K4GMH	1,769,468	*10.	DL1VR	1,069,350
* 4.	W3EKT	1,600,154	*11.	HK3PB	1,032,460
* 5.	I5WT	1,271,104			
6.	I6NO	1,206,038			

CONTINUED ON PAGE 13

Easy Way to FSK Drake Line-

JOE WILKOWSKI, WB8DMC
25184 Leach
ROSEVILLE, MI. 48066

The actual shift circuit is a saturated diode keyer right out of the handbook, but instead of using an FSK driver to supply the forward bias needed for the diode, I used a 9 volt transistor battery, which is supplying .9 milliampere to the diode. Since the diode is non linear, the current does not change in proportion to the voltage across it. At that small of a current draw, the battery will last a very long time and even when it does start to get weak, the current will remain the same until the battery gets very low. The 10K resistor limits the total circuit current to .9 mill. The whole circuit can be mounted on a 3 lug terminal strip and placed near the T4X-B PTO utilizing present chassis hardware. Once the circuit is installed, you can use your own T.U. to adjust the shift. Place the transmitter in spot and tune your RX until the space is properly displayed on your scope, then simply key the shift circuit and adjust the 3-12 PF variable to obtain the proper shift by watching the mark display on your scope. The read is shown open, indicating no loop current. When the loop is on, the reed contacts are closed, completing the shift circuit. In this condition with the keyboard closed the VFO is downshifted 170N to indicate a mark, when the keyboard is open the VFO upshifts to indicate a space. To reverse, just wire the reed so its contacts are open when the loop is on.



*****

The MAINLINE UT-4



IRVIN M.HOFF, W6FFC
12130 Foothill Lane
LOS ALTOS HILLS, CA. 94022

THE MAINLINE UT-4

INTRODUCTION:

The Mainline UT-2 was described in last month's issue. It is essentially a regenerative repeater utilizing the UART chip. With a second clock it can be used as an up (or down) converter -- both for transmit and for receive. If used as a down converter, the input speed cannot exceed the maximum character rate of the output speed -- otherwise it would over-run with loss of characters.

The Mainline UT-4 adds buffer storage, virtually eliminating over-run possibilities with hand typing. It also offers visual display of buffer quantity. An integral delay system offers the operator the ability to select an output rate that gives a steady, uniform transmission speed. The system effectively brings the computer age to the typical RTTY enthusiast.

BASIC DESIGN PHILOSOPHY:

Most RTTY operators hand type approximately 40-45 WPM. Even so, the mechanical limitations on the keyboard of the machine sometimes prevent the operator from typing as well as he otherwise might. The idea behind the Mainline UT-4 was to allow the operator to type as fast as he cares to, in as jerky a manner as he likes, while selecting an output rate that keeps characters backed into the buffer memory enabling a continuous and steady output speed. This makes it possible for the operator to type easy words rapidly and yet slow down on those that are more difficult without affecting the output speed at all. Those who have heard such a system being used are instantly aware that "something is different". The effect is similar to that of a slow-running tape distributor, yet no tape is being used.

ADVANTAGES:

When the operator can select his own output speed, it usually allows him to make fewer errors than when he is trying to approach machine speed. The system allows him to use 100 WPM gears if he is really a fast typist or otherwise has found the mechanical limitations of the 60 speed gears detrimental to his typing style. Even with 60 speeds gears, the machine can receive 100 WPM hand typing with no loss of characters if the person typing is not averaging over approximately 64 wpm. The operator can also transmit at 100 WPM with his machine geared for 60 WPM, although his maximum actual output speed would be that of the printer itself, or about 60 wpm, due to keyboard limitations. This would allow for the first time a reasonable intermix of various speeds with printers geared for one specific speed. A number of other interesting possibilities come to mind -- with the optional T.D. control system, a person can send a CQ tape at the same speed he plans to hand-type during the QSO -- this in itself offers a most interesting phenomena of advertising in advance what the other person could expect from your typing. Of course the output speed could be run quite slowly to conserve paper if a lengthy CQ were needed. These are some of the more obvious possibilities available.

FUTURE POSSIBILITIES:

The Mainline UT-4 was deliberately kept about as simple as it could be and still operate within the basic design philosophy. A wide variety of interesting additional features could be added. For instance, a "diddle generator" that would automatically insert letters characters (or 'figures' if in upper-case) if the buffer storage became empty. This would fake machine speed regardless of what the operator was doing. An "anti-diddle" unit could be added that would ignore all superfluous letters (or figures) characters not actually needed to put the machine in upper or lower case. A feature could be added that would allow the operator to flip one switch and continuously repeat whatever was currently in the FIFO storage, up to the 80 character limit -- for instance you could type a line of CQ and your call then just sit back and watch it type that same line again and again -- when you turned that switch back to normal position you could continue typing on the next line while it was finishing the present line, making no interruption of the transmission at all.

Other interesting applications will certainly be developed by operators using the device.

SOLID-STATE KEYBOARDS

Computer-type keyboards are usually 4-row "ASCII" encoded. Many of these are showing up on the surplus market at prices that interest many RTTY operators. It is only a matter of time until amateurs will be allowed to use the 8-level ASCII code, but in the meantime, it is possible to use these keyboards with Baudot output. Cole Ellsworth W6OXP has been developing such a system to use with the UT-4. In this case he converts from ASCII-to-Baudot and then stores the Baudot characters in the FIFO memory. This enables him to run the input speed to the UART at anything he likes that is commensurate with the full-N rollover capability of the ASCII keyboard. A report on his work should appear before long.

The Hal Communications dual-mode 2010 keyboard may be easily used with the UT-4. The keyboard would be placed on the 100 WPM speed and then the built-in character counter would accurately show when to CR-LF regardless of your typing speed. The status indicator on the UT-4 would show if you needed to adjust the output rate or not.

MEMORY SIZE:

The FIFO units used in the UT-4 are the Fairchild 3351 type. These are 40 characters by 9 bits wide. They will be suitable in future years for use with 8-level ASCII keyboards. Two of these units are shown in the schematic, but additional units could easily be added between the two shown, in a similar manner. The status indicator is wire for up to 128 characters, so a third FIFO could be added with virtually no other changes.

CURRENT REQUIREMENTS:

Approximately 600-650 mils of current at 5V will be needed if the XB-6 with dual output clocks is added to the UT-4. The voltage should be adjusted for as close to 5.0 volts as is convenient. The limits are 4.5 to 5.5. volts for proper operation. Approximately 10 mils of -12V is needed for each FIFO, making a total of about 25-28 mils needed, including the UART.

THE RECEIVE-TRANSMIT SWITCH:

If a DPDT toggle switch is used for S-3, the second pole may be wired to turn the transmitter on or off, giving a "1-switch transmit control". The transistor connected to the standby line keeps the motor on during transmit should the operator be using normal autostart.

METER POSITION:

The status indicator should be placed as near the operator's normal line of vision during typing, as possible. This may well indicate it would not go on the same cabinet that contained the rest of the unit, but perhaps in a small enclosure placed directly to the side of the teleprinter. The larger the meter movement the easier it is to just glance at the quantity of characters currently in memory. Lamps of course can easily be added to the output of the unit to show empty, full, partially full or whatever you like.

THE PRE-LOAD SWITCH:

The S-5 switch (pre-load) allows the operator to type ahead and fill the buffer if in transmit mode. During receive, the switch will stop the output to the printer and store the characters in the FIFO while the operator quickly changes the roll of paper. An optional switch (S-8) called the "repeat switch" may be added that would allow continuous repeat of whatever was pre-typed, such as "RYRYRYRY" or "THE QUICK BROWN FOX" or "CQ CQ CQ", etc. This would be a DPDT switch. The wiper arm of one pole would go to pin 10 of IC-1d, the normally closed contact to the wire presently shown hooked to that pin, and the other normally open contact to plus 5 volts. The wiper arm of the second half of the switch would hook to pin 2 of IC-1a and the 4700 ohm pull-up resistor would hook to that same pin. The normally closed contact would connect to the end of tne 8200 ohm resistor presently shown hooked to pin 2. The normally open contact would hook to pin 9 of IC-1d. The following routine would then be used:

1. S-3 to transmit
2. S-5 to pre-type
3. S-8 to normal
4. Type in the line you wish to repeat
5. S-8 to repeat
6. S-5 to normal

When step 6 has been completed, the text starts to be transmitted. It will also now appear on the local printer copy. When you wish to terminate the repeated line, just return the repeat switch S-8 to normal, the local copy immediately stops although the buffer will continue to output

until empty -- and you can again type into the buffer getting local copy on the printer. This is one of the many optional things that can be added to the UT-4. CAUTION: This S-8 switch would only be useful if the input Baud rate and output Baud rates are the same!

THE SPACE SWITCH:

Closing S-7 (space switch) causes the output of the AFSK or FSK to go to steady space tone. This is needed to set the shift properly. A full-shift compatible C.W. ident device can also be added at this point if desired.

NO IC-3:

There is no IC-3 in the UT-4. That is used in the UT-2, and since it is somewhat different in the UT-4, it is called IC-4 instead to avoid confusion. Therefore you will not find an IC-3.

HOOKING TO THE ST-6:

The interface between the ST-6 and the UT-2 will be similar to that for the UT-4. The UT-2 schematic in the February 1975 RTTY JOURNAL must be used to observe these connections.

HOOKING TO THE ST-5:

If the ST-5 is used, a similar hookup to that of the ST-6 would be incorporated, except do not hook the standby line to the NPN transistor unless it is another MJE-340 -- the standby line on the ST-6 is approximately plus 12 volts and is regular loop voltage on the ST-5. If that point is connected, the S-8 switch mentioned in the pre-load section would not allow local copy in the repeat mode.

CIRCUIT DESCRIPTION:

An incoming signal goes through the slicer (mark positive) and is inverted in the transistor to a mark low. It then goes into pin 5 or IC-1b, and is again inverted to a mark high on the output. The UART is then triggered with this signal. At the completion of a character, the data appears on the output lines (all 8 are shown connected for eventual 8-level ASCII use). The data available flag U-19 goes high, initiating the transfer of the character into the FIFO storage buffer. This U-19 "high" triggers the first one-shot of the 74221 IC-11. The "not Q" output is used to reset the data available flip-flop U-18 via IC-4c and IC-4b. The "Q" output is used to strobe the character into the FIFO registers. At this time the character is automatically transferred through the FIFO and the data available flag F-12 goes high indicating a character has been removed. The same pulse that reset the data available flip-flop (U-18) via 4c and 4b also pulses the up-counter (pin 5 of IC-9) showing on the status indicator that a character has been received. The 4-input NAND gate 5a is now activated putting an immediate low to both the IC-6 and to IC-7d. Since we are in receive, we shall ignore IC-6 at present as its output is inhibited by a low at pin 12 of IC-7c. Therefore IC-7d goes low, tripping the IC-8a flip-flop. This in turn strobes the character into the transmit side of the FIFO via U-23. It also operates the other section of the flip-flop one clock pulse later, which in turn resets the first section while operating the down-counter, showing the character has been removed. At the same time the output strobe of the FIFO is reset, putting a low on the data available line, turning off IC-5a. While the character was being transferred into the FIFO, U-22 went temporarily low showing a transfer was in progress, and while the character was actually being outputted through the transmit section, U-24 went low. As all of these are connected to IC-5a, it would not be possible for another character to be sent to the transmit section of the UART no matter how fast the characters would be stored into the FIFO. Only when all inputs to 5a go high can another character be processed.

On transmit, IC-7c is activated instead of IC-7d, and now the dual one-shot delay IC-6 enters the picture, delaying the pulse to IC-7a for a period adjustable by the 50K delay pot. With the 5 Mfd. capacitor chosen, and outputting at 45.45 Baud, the output speed may be varied from approximately 30-64 wpm, at the operator's selection. A larger capacitor may be used to slow the output further if desired, although 30 wpm is already quite slow for all but a beginner on RTTY.

The pre-load switch utilizes a "bounceless" arrangement as the logic chosen only needs about 15-20 nanoseconds to activate.

REQUIRED STOP-PULSE:

You can experiement with switch S-4 and see if you prefer incoming signals to have a stop pulse or copy them as long as the UART thinks it received a valid start pulse. Many operators think they prefer to leave this switch closed, but a few like the required stop pulse. You have the option of doing which one you prefer on the UT-4.

ONE MEASUREMENT:

When in mark, measure the voltage at pin 2 of IC-1a. It should be less than plus 0.4 volts -- if not change the 8200 ohm resistor to a value that gives approximately zero volts when the FSK line is connected.

THE AUTO RESET:

When the FIFO has had characters and then becomes empty, the voltage at F-12 goes low and stays low, activating the auto reset at pin 2 of IC-11. This in turn triggers the output of the memory clear 4-input NAND gate IC-5b, resetting the status indicator to zero. The purpose of this system is to make certain the status indicator shows zero at any time the FIFO is empty. This guards against occasional possible meter errors due to RF glitches, etc. Again pulses as short as 15-20 nanoseconds can activate the up-down counters (IC-9 and IC-10) so this acts as a back-up device.

THE D/A CONVERTER:

The interesting feature about the IC-12 chip is its ability to take binary input counts from the 74193's and change them into a linear output current. To set the status indicator (0-1 ma. meter), you would just hit the pre-load switch and allow the unit to copy until the FIFOs were obviously full. The 2500 ohm pot would then be adjusted to indicate full scale and you are finished. Thereafter the meter would indicate the amount of characters in the FIFO. With an empty FIFO, the meter might not show exactly zero due to a very small residual current at that time. The mechanical zero on the meter face could be used for this purpose. The D/A (digital to analog) converter is shown connected for up to 128 characters. As it is an "8-bit converter" it could be wired to accommodate up to 256 characters with individual increments.

OPTIONAL D/A CONVERTER:

The optional D/A converter uses fixed-value resistors. They are considerably cheaper than the $6 Motorola D/A chip and some builders have expressed an interest in saving the money. The 25 ohm pot adjusts the meter for zero with empty buffer, and the 50 ohm pot adjusts the meter when the buffer is obviously full.

T.D. CONTROL:

The T.D. must run at the same gearing the printer has. If the printer is set for 100 WPM, the T.D. must be also, in order to get local copy. The input to this system is hooked to the up-down counters so that when the FIFO gets almost full the T.D. is shut off until the FIFO units are empty at which time it automatically starts up again. This keeps the FIFO from overrunning. Since you will be outputting while the T.D. is running, it will take longer for it to cycle on and off than might first be expected. Switch S-21 gives an interesting use of the T.D. -- when in normal the T.D. can run at 8.0 unit code output due to the ungrounding of the UART's U-36 pin. If the S-21 is in "slow" position, then the output of the UART is the same speed as that used during hand typing -- for the first time you can use the T.D. to call CQ at the same speed you intend to hand type! You can close the S-21 switch and immediately speed the output up to normal output rate. If you use only a 60 wpm printer and 60 wpm T.D. there is no necessity in ungrounding U-36 as the T.D. would then run its usual 7.42 output speed. The U-36 arrangement was added primarily for using 100 wpm T.D. units where the output speed would then be that of the UART itself.

TROUBLE-SHOOTING:

While receiving, a voltmeter or scope (D.C. type) could be used -- the output of the slicer at point AA is about plus 11 on mark and about minus 11 on space. Pin 5 of IC-1b should then go low (about 0.2 volts approximately) on mark and around 4-5 volts on space. Pin 20 on the UART should go high (4-5 volts) on mark and low (around 0.2-0.5 volts) on space. If the clock speed is normal at pin U-17, the data pins U-8 through U-12 should alternate at least occasionally, depending upon what characters are being received. If they do, then the UART is no doubt working correctly. The output of many of the other points of interest is so short duration it may be all but impossible to see if they work normally or not. For instance the output at pin 12 of IC-6 and IC-11 is on the order of 1.5 microseconds. A meter would not show this and it would take a rather fast, triggered scope to see it as well. Unless you are fairly adept at checking logic circuits, there would be a distinct advantage in buying brand new components from a reputable dealer. Apparently some of the surplus places selling IC's for low cost do not bother to even test the items to make sure they are not shorted or defective. The more expensive IC's at least should be mounted in Molex pins so they could be readily removed if needed.

P.C. BOARDS:

An unusual amount of interest has already been generated in the Mainline UT-4. Most of those active on the west coast autostart net (3612.500 KHz.) are already using this device. Two of the fellows participating on that net have p.c. boards available. One source is Clyde Keenan

K7WTQ in Lakebay, Wash. The other source is Jim Page WA7ARI who is calling his firm EDI, for Electronic Development, Inc. He plans to not only offer boards that are drilled, plated through (requiring no jumpers), but also hopes to have available a complete kit of all parts needed. Check the classified ads in this and future issues. No other source of boards is expected to be available.

THE RM-200:

Howard Nurse W6LLO was the first amateur known by the author to use the UART/FIFO combination. He is a very competent independent design engineer. After hearing his unit some time ago, the author urged him to produce it for amateur use. This has been delayed somewhat because of other more pressing business matters, but the RM-200 represents a much more sophisticated device than the UT-4. It uses 5 p.c. boards and among other features offers a diddle generator, an anti-diddle unit to remove superfluous letters (or figures) characters, interrupt inputs and other unique features. Howard hopes to soon publish further details on the unit.

ACKNOWLEDGEMENTS:

A large number of people have been interested in this project from the beginning. It is difficult to try to give credit where it is due without overlooking or slighting someone. Several people stand out in particular: Howard Nurse W6LLO whose comments, suggestions and advice have been most helpful. Steve Klingler WA5GRE/5 whose beautiful drawings appear in this issue. Clyde Keenan K7WTQ whose work with the reproduction of those drawings was greatly appreciated. Cole Ellsworth W6OXP who made the original work by the author available to over 100 interested enthusiasts. Pete Bertelli who has made it convenient to obtain the integrated circuit chips needed. Barry Simpson WA7HJR who built the first unit after the prototype was completed. Karl Hatfield W6BXR who was first to try the T.D. control section. Peter Morley K6SRG whose support and xerox machine have been most helpful. Many others have contributed comments and suggestions and include W1HAB, K2SMN, K4CZ, KL7HOH, K5UAR, WA5IAT, K4EID, WA5NYY and WA7RQV. This has certainly been an interesting undertaking and the enthusiasm and cooperation of all those mentioned could hardly have existed on any other mode of amateur operation.

SUMMARY:

The Mainline UT-4 was designed to allow the operator to type at a keyboard speed comfortable to him whether 60, 75 or 100 wpm, and to adjust the output speed for the Baud rate being used so that some characters would remain in the buffer allowing even and steady output speed. In addition the unit allows up/down conversion regardless of printer speed as well as improved reception and transmission at minimum distortion. It helps any printer to receive and transmit equal to the very best units available.

Irvin M. Hoff W6FFC

(Last Minute Addition)

(This addition was developed too late to incorporate into the main drawing.)

If the up-down counters are on zero and a false count is received, the counters try to "go around" to 255 counts. This would be 127 counts on the configuration used on the UT-4 so the meter would try to pin at full-scale. Although this rarely has occurred a simple solution has been developed that prevents this happening.

First remove pin 12 of IC-5b from plus 5 volts. Next install a 4700 ohm resistor from this now vacant pin to plus 5 volts. Also connect this same pin 12 to the output (pin 3) of IC-4d. Connect the two input pins (1 and 2) of IC-4d together and attach to pin 7 of IC-10. (That's all.)

Explanation. If the counters ever attempt to "go around" on a false down count, this system will reset their clear lines to zero automatically. (This addition is incorporated in the P.C. boards previously mentioned.)

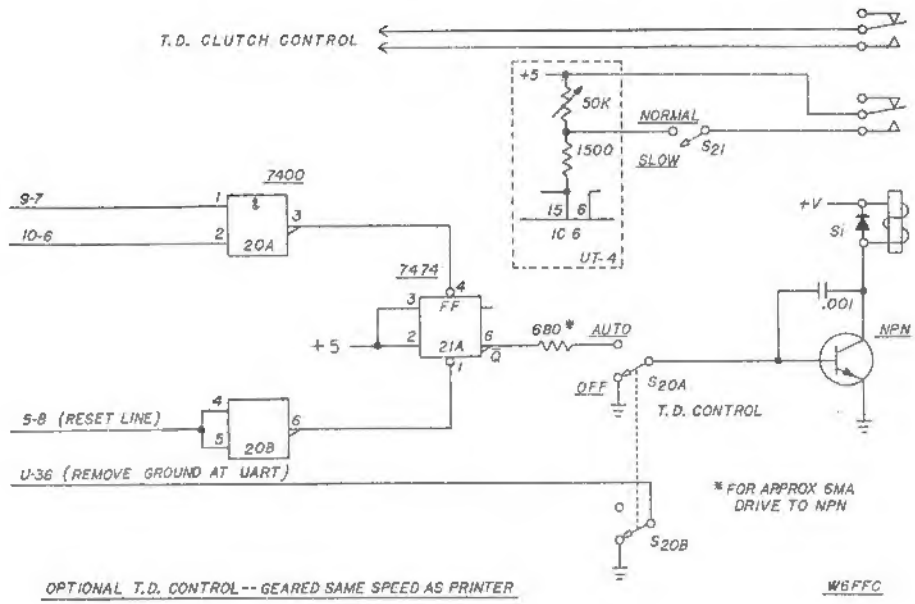
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MAINLINE UT-4

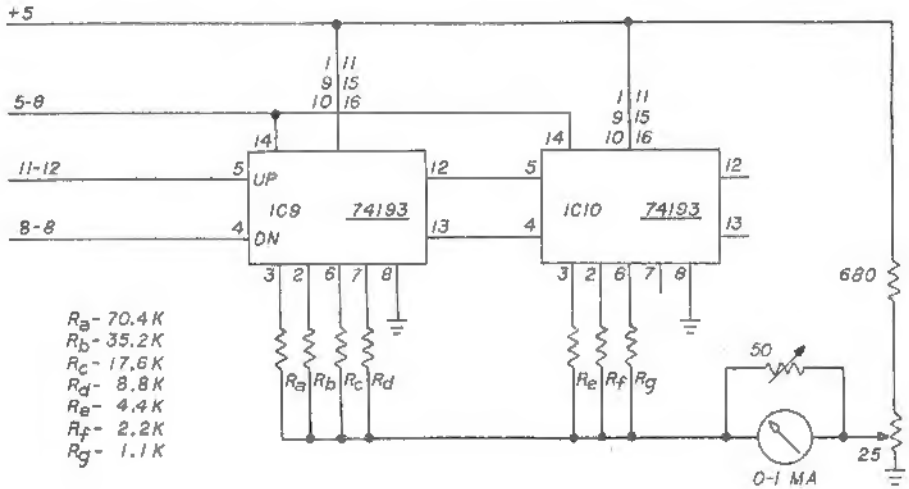
Schematics

on following 3 pages.

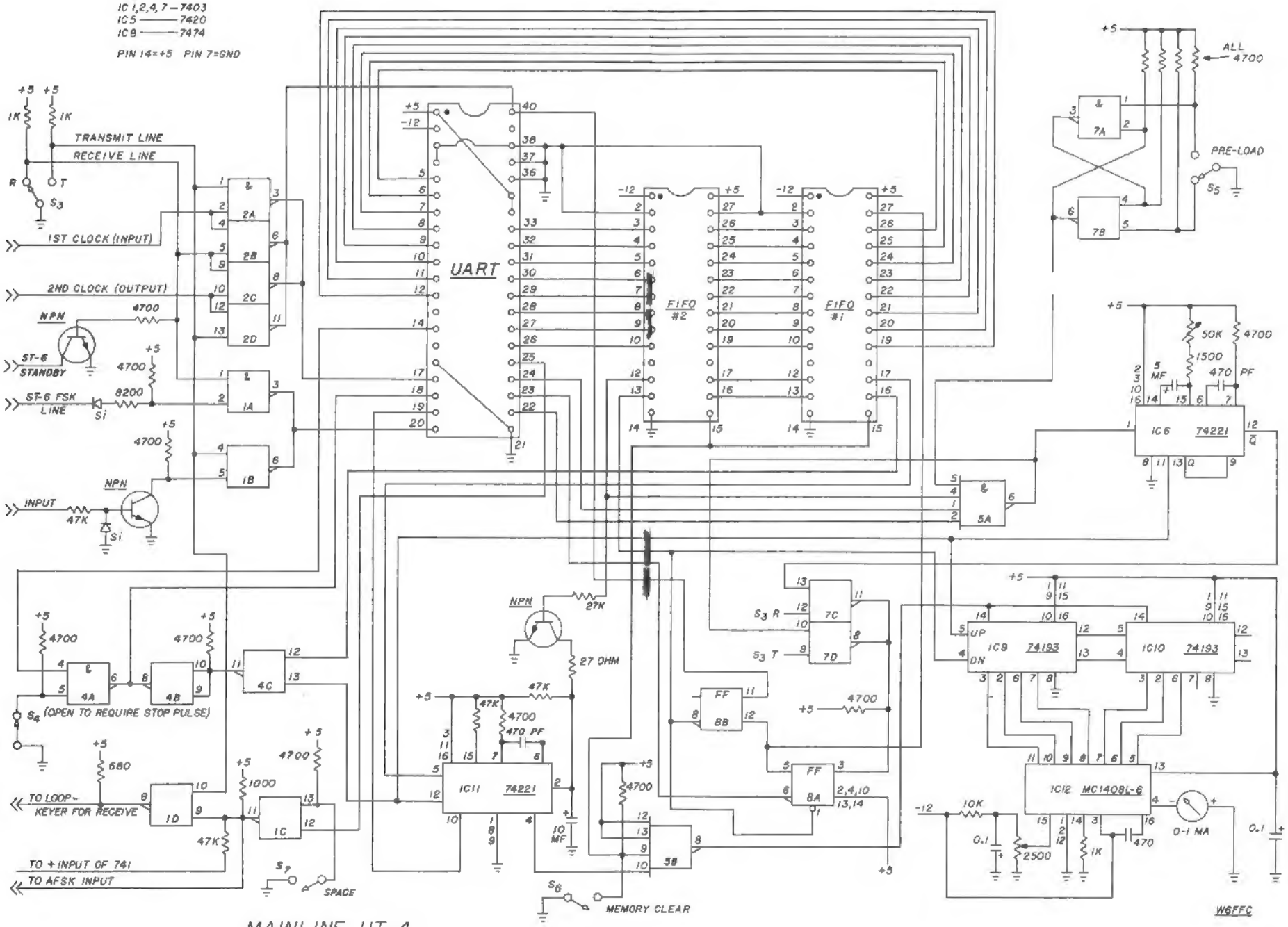
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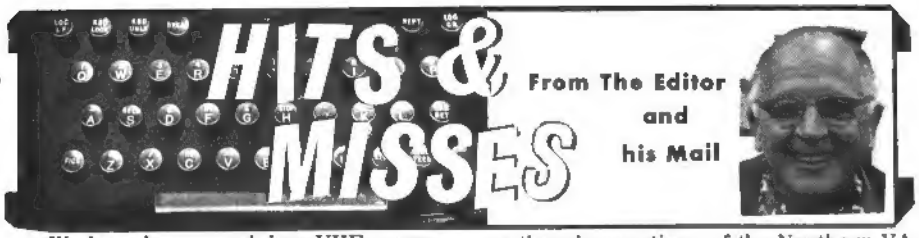
OPTIONAL T.D. CONTROL -- GEARED SAME SPEED AS PRINTER — W6FFC



OPTIONAL D/A CONVERTER — W6FFC



MAINLINE UT-4



We have been receiving VHF operating information at a slow, but relatively steady rate. It would be nice to receive more, but at least, we have enough to show that there is activity taking place, Please keep the information coming; the following is typical of the type of information desired.

Warren "Buck" Buchanan, no call given, reports on activity as follows: "Around the Kansas City, MO area, 146.700 MHz is the RTTY frequency. 850 Hz shift is used with very few stations set up to run 170 Hz shift also. The frequency is used on voice, also, to help newcomers, iron out our own problems, or just have a good old rag chew. There are about ten stations active now, with at least that many more showing interest enough to start collecting equipment. Nearly all are newcomers, with only a couple of old timers. Application has been made with the FCC for a 146.100/146.700 MHz repeater, with late winter or early spring as the turn on date. There is one station located about 100 miles south of us, and when conditions are reasonably good, we can work."

From Daryl Duffin, K7ZOF, Ogden, UT: "Just a note to let you know what I know about RTTY in the Ogden/Salt Lake area. At present, there are several of us on 146.700 MHz simplex AFSK, mostly 170 Hz shift, 5 kHz deviation. Some are also on the Army MARS repeater. Plans are cooking to convert the present Ogden repeater to 146.100/146.700 MHz as soon as the new repeater site is operational, with the 10/70 standing as backup to the 22/82. Most all the AFSK is also autostart, so anyone in the area that has the capability, get on and give us a blast!"

Steve Roth, WA4IKU ex-CE3YO, has an update on the information given in this "column" in 1975 JAN: "Currently, a small group of us is working FM AFSK RTTY, on 146.580 MHz, a designated non-voice simplex channel in this area. We use 170 Hz shift, 2125-2295; most use autostart. The area of coverage depends on the type antenna, etc., but should cover the entire Washington, D.C. area. We are announcing this activity on weekly on-the-air meetings of the Northern VA FM Association. A lot of fellows have expressed interest in 146.580 MHz simplex and are getting .58 xtals and doing the necessary wiring to get on. There is also a small group of us that have held an initial meeting to get a RTTY repeater on the air. We plan more meetings in the immediate future. Current thinking is to use 450 MHz since a repeater is available with site and call sign."

Pat Gasper, WA4RUO, Covington, KY, has an interesting "earful" regarding the Cincinnati RTTY repeater: "Two meter FM repeaters are popping up all over the country and are the delight of many amateurs, but thoroughly disgusting to others. If you tried it and did not like it and you live within about 100 miles of Cincinnati, now is the time to try it again.

"Imagine a two meter FM repeater where RTTY is king! That is right - RTTY is king! The Midwest Amateur RTTY Association (MARA) has done it again. Some may remember its six meter AM repeater. The natural sequel, of course, was a two meter machine. This one is a real performer, making local VHF RTTY a real snap. Autostart is no longer only practical, but a real natural with rock-solid repeater and standard crystal operation on two meter FM.

"The repeater operates on standard pairing of 147.690 MHz input, 147.090 MHz output. Five kHz deviation and 850 Hz shift are the requirements. The repeater has a TU and autostart system that upon hearing a RTTY signal, puts the machine in the RTTY mode and kicks in some compression to drive the repeater to full deviation. I have heard this machine take a signal with some noise on it and go into full quieting when in the RTTY mode. It is also a carrier operated voice machine with autopatch in emergency situations also.

"Here is the proposed format: From 6 AM to 6 PM, ordinary carrier access for to and from work traffic. 6 PM to 7:30 PM, members are requested to limit activity to autostart traffic only, including W1AW RTTY bulletins re-

broadcast by an OBS, or any traffic type messages. From 7:30 PM to midnight, general QSOing permitted and encouraged (RTTY only). From midnight to 6 AM, sort of an experimental quiet hours where anything goes including 100 WPM, F4 Fax, slo-scan, MCW, etc.

"During RTTY only periods, voice is expected to be held to a minimum only for tests and clarification such as getting one's tones adjusted or setting up one's autostart, etc. 60 WPM is normally used and standard tones of 2125 and 2975 Hz are accepted within a passband of plus/minus 50 Hz for each tone. During RTTY only periods, the machine requires an RTTY signal for access. and once accessed will stay in the voice mode unless the repeater carrier is dropped for more than 30 seconds when it will revert back to RTTY access required. Even during carrier access periods, RTTY always has priority. The machine is well located in a Northern Suburb of Cincinnati with an ERP of about 400 watts and is duplexed using a Station Master antenna. Tom Talley, W8HQQ is trustee and chief engineer."

There is an RTTY repeater on the air in Detroit, according to Dusty, but no details are available yet. Anyone in Detroit have some details?

We understand that the Tu-Boro Radio Club sponsored a Two Meter RTTY Contest on 146.620 MHz on Sunday, FEB 2. We received the information too late to give advanced notice. Anyone interested in finding out how it went and in finding out about the next (?) one should write to: Tu-Boro Radio Club, 149-14-14th Avenue, Whitestone, NY 11357.

That's it for this month for news. Thanks to Buck, Daryl, Steve, Pat, and Dusty for the information - let's have more!

We have three items in the "current awareness" category: A complete index of all articles on RTTY in Ham Radio Magazine appeared on pp. 126-127 of the 1974 DEC Issue. In the 1975 JAN Issue of Ham Radio Magazine, pp. 8-15, Bert Kelley, K4EEU, had the article: "Random Access Memory RTTY Message Generator." "Phase-Locked Loop RTTY Terminal Unit," Nat Stinnette, W4AYV, Ham Radio Magazine, 1975 FEB, pp. 36-37 looks like a real winner.

Well, that's it, period.

73 ES CUL next month, RG.

*****

Contest Scores-

CONTINUED FROM PAGE 2

*12.	IT9ZWS	940,504
13.	I5CLC	895,448
*14.	W5NBI	873,350
15.	W3KV	841,434
*16.	OZ4FF	819,246
17.	KØYZV	811,125
*18.	K6WZ	752,780
*19.	ON5WG	720,012
*20.	JA1ACB	644,528
*21.	PY2CYK	625,312
*22.	W9KDX	526,835
23.	K6EQV	504,250
*24.	VE7YB	496,300
25.	DA1LS	484,718
26.	W5CEG	460,820
27.	I1PXC	433,064
*28.	CE3EX	419,775
*29.	VK3KF	396,200
30.	CE3MA	367,700
31.	18AA	360,825
32.	JH1ISF	346,480
*33.	WAØPFP	337,405
*34.	VE2JR	328,020
35.	W7BCT	327,360
*36.	HB9AVK	294,830
*37.	W1DXQ	273,332
38.	W6JOX	256,950
39.	WØMT	256,880
40.	W3CRG	250,420
*41.	VE1XP	238,596
42.	KØQJP	214,838
43.	ON4CK	212,970
44.	K4WAR	210,095
45.	DK3MG	209,280
46.	WAØTAS	208,904
47.	VE7BDQ	196,045
48.	IØZAN	176,685
49.	WB4PTU	168,500
50.	WA6DEI	166,380
*51.	W8CQ	157,600
52.	ON4BX	137,284
*53.	PAØWDR	136,925
*54.	SL5AR	135,660
55.	DK1QC	134,292
*56.	SMØOS	125,450
57.	WA8QWR	122,500
58.	VE2ARA	118,704
*59.	VE5WZ	115,880
60.	KØJJP	103,320
61.	WA3WAD	88,700
62.	K8NTK	86,012
*63.	XE1AFU	80,690
64.	W7CBY	76,295
65.	K4GHW	70,887
66.	W7MI	69,432
67.	K2RY1	62,150
68.	K8KAG	60,208
*69.	OA4BR	57,052
70.	K2OYG	56,600

Multi-Operated Stations

* 1.	DLØTD	1,089,240
* 2.	HA5KDQ	373,370
3.	WAØKHF	241,000
4.	DK1AQ	18,680

SWL Printer

1.	K1LPS/18	811,100
	Larry Filby	
2.		693,792
	Paul Menadier	
3.		323,590
	Horst Ballenberger	
4.		240,320
	Alberto Marchesini	
5.	W8VZB	125,775
	Mel LaMoreaux	

71.	DJ8BT	52,840
72.	OZ8GA	49,960
73.	W8JIN	47,230
74.	DJ1QT	43,042
*75.	TF3KB	40,700
76.	VE2GA	37,920
*77.	VE3BPM	28,791
78.	PAØRZ	24,481
79.	JA1EUL	22,200
80.	W2VAQ	21,250
81.	WA7ZRX/6	20,892
82.	DK3NH	19,175
83.	OZ2X	19,060
*84.	G3RDG	18,911
85.	OZ4EDR	17,712
*86.	LA5HE	14,904
87.	W9MBW	10,980
88.	WA1PWF	7,420
89.	VE3CXK	6,800
90.	SM5FUG	4,820
91.	JA1EYH	3,160
93.	PAØWDW	1,668
94.	VE6AYM	1,569
95.	OZ8DR	940
96.	W8TCO	690

▲Certificates to be issued to the top scores in each U.S.A. and Canadian District, and each Country.

*****

RTTY-DX



JOHN POSSEHL - W3KV
Box 73 Blue Bell, Pa., 19422

Hello there . . .

This goes to press before receiving any reports of activity during the Giant Flash Contest and since we were unable to participate in either of the two sessions there is no "eye witness" account of the proceedings. We will have to postpone any reports of interesting happenings to a later date.

The next big DX activity scheduled is the BARTG Spring Contest which will take place on 22 to 24 March. This is always a well attended affair and an excellent opportunity to increase your DX totals toward DXCC-RTTY. Details as to rules and message exchange can probably be found on other pages of this issue.

Details on the WAE Contest will follow later but we remind you that the dates are 19th and 20th of April. Starting this year a beautiful four color plaque will be awarded to each Continental leader meeting the minimum point requirement. There will be a second WAE Contest to take place the second week end of November this year and in the future the WAE will have their affair on the November date only.

Results of the 14th World-Wide RTTY-DX Sweepstakes conducted by the CARTG are out and top honors go to Henri, LU2ESB, closely followed by Paul, KH6AG. It was the final effort for Henri from Argentina and he certainly left a record that will be hard to beat; 3,505,384 points. A total of seventeen Plaques and Medallions were awarded and all are to be congratulated for their excellent performance and for making the Contest such an outstanding success.

With conditions on Ten almost nil and with openings on Fifteen few and far between Twenty meters has taken over the full load of RTTY-DX activity. However that band has been having more frequent periods of malaise as the sunspot numbers play tricks with propagation. How about giving Forty Meters a try? There is almost daily activity around 7040 khz and a clear spot can usually be found between broadcast stations. WAC is indeed a very good possibility. CR6CN has been on and JA1ACB and JA1EYH are always looking for contacts. Kozi, JA1EYH uses a rhombic 400 feet on a leg and 80 feet up in the air so if you are "on the beam" Asia should be no problem. XE1WU and XE1QD are on this band almost every evening as well as W4CQI, WB4MOM, and a scattering of other Stateside stations. KH6AG and VK3KF are good bets from Oceania. Europe should present no problem and some of the South American boys can get on with no trouble. I believe it is a case of Stop-Look- and Listen, and not hearing anything, you go on your way. Try a few runs of CQ next time you get up on that band. Who will be the first to make WAC on 7 mhz. ? We have a certificate here for you.

The month of February should bring activity from Marcus Island again by JH1AHY, and he is due to be there for about three months. Kei, JD1ABH has been bursting through to the East coast USA at around 2330z when conditions are right. However at this time of the year you have to be quick as he is only in there for ten or fifteen minutes with a readable signal so keep rag chewing to a minimum.

VKØMS has been reported active with a 170 hz shift and 45 band speed. This prefix is usually used by Australian bases in Antarctica but it could also be Macquarie Island which would count separate. Unfortunately we have no confirmation as to just where he is at this writing so the adage, "If you hear em, work em" would be the best course to follow.

A word to the wise. . . We understand that a schedule with VK9XW on Christmas Island can be made via his manager, VK6RU, whose QTH we printed here some time back.

Chris, VK6CT, is a new station on from Perth and has been putting in an excellent signal to East Coast USA via long path in the early evening. Chris uses a Heath SB-401, SB-303, and a Creed machine. As a matter of interest, a Great Circle map centered on New York shows that Perth is the most distant point on the globe so long path is quite a haul for low power.

From the Republic of Ireland EI5C has been on quite a bit lately. The operator is Jim and the activity comes from Curragh Military Camp, near Dublin. The gear is all military as would be expected and the speed is 50 baud and 850 shift.

Dick, WA3JTC/ZP5, continues to give the boys a new one from Paraguay. He is also trying to get some activity going from Uruguay by CX7BZ. Fred apparently has a printer and converter and Dick is getting together a AFSK unit and whatever else is necessary to get a signal on the air. This may not be very far into the future so watch the bands closely. When that day comes send your QSL to. . .

Fred Bongertir
P.O. Box 2225 District 4
Montevideo, Uruguay

Joe, 7Q7JO, was still active at the end of December but his tour of duty in Malawi is completed so his future plans are uncertain, it is possible that he may stay there longer. In any event, we all do thank Joe for keeping this rare prefix alive over the past several years and wish him well in any future endeavor.

W4CQI was the first contact for CR6EO,, a new station on from Angola. Time was when RTTY from Angola was only a distant hope but a couple of years Jo, CR6CA, got on with the help of W5ZCH and there has been a continuous stream of activity ever since with CR6IK, CR6AR, CR6CN, CR6NO, CR6RT, and Jo even got CR7DB in Mozambique active for a short time.

Looking for Finland! OH2HN has been doing a good job keeping the OH prefix active on RTTY. His QTH is. . .

Altti Unkuri Kukkaniityntie 11
SF 0900 Helsinki, Finland

For WAC this month congratulation go to. .

Nr. 236 Paul Gagnon WA6DEI

The OY1M logs have been received by his manager W6TCQ, The QSL's are on their way to all that applied and to those who have not as yet the QTH for W6TCQ appeared in the December column.

RTTY in Italy, a new Group has been formed to increase interest and to further organize activities in this field. The organization is called "Italian Advanced Techniques Group", I.A.T.G. and is sponsored by CQ Electtronica Magazine. Secretary is Dr. Franco Fanti, I1LCF, whom you surely know as organizer of the Giant Flash Contest and the annual RTTY World Champion Award. This new group will be at the service of not only the Italian Amateurs but also of friends with similar interests world-wide.

The input supplied by W3DJZ, W4CQI, K6WZ, JA1ACB, JH1TFF and QN4BX was very much appreciated. 73 de John

DX-RTTY March, 1964

BARTG elected G3LLV Secretary and G2FUD was appointed Editor of the "NEWSLETTER". G6CW was elected President and G3CQE Awards Manager. A new DX Award is being planned for the near future.

WAC Nr. 44 goes to Cecil, W7VKO. Erosa, XE1BI is active from Mexico. Much interest in RTTY is being shown by amateurs in Budapest. They are already receiving and permission to transmit is hoped for in the near future.

***

ETIQUETTE in RTTY.

DON ROYER, WA6PIR
16387 Mandalay Ave.
ENCINO, CA. 91436

We have all seen operating practices come into use and continue to be used even though they do not make for the best communication in this mode. Newcomers usually listen for a while and then adopt those things they see and hear. The results are often poor practices, consumption of time without real information being transferred and are sometimes downright irritating to operators of receiving stations. Our goal, of course, should be the transfer of thought and information in an efficient manner and in keeping with the rules.

Here are a few suggestions which may serve to improve our operating practices and techniques.

Typing and Spelling:

Do make an effort to learn to type and spell. This does not mean that you must take a formal course in touch typing, as even two fingers can do a good job with a little practice - but practice on your local loop and not on the air. Try to arrange your words as you would normally talk, inserting punctuation where appropriate. If you do make a mistake, space and do it right. There is really no need for those long strings of X's or E's. Keep your lines within 72 characters (65 if working foreign stations) and do try to come close to this limit. Short lines use a lot of paper and it is expensive these days. Keep line feeds at a minimum and eliminate unnecessary spaces between words. While learning to type, or if there is absolutely no way you will ever learn, try prepunching your messages on tape.

CONTINUED ON PAGE 17

VHF RTTY NEWS



RON GUENTZLER, W8BBB Editor
212 GRANDVIEW Blvd.
Ada, Ohio 45810

We have received very few comments on the new restructuring of the amateur licenses which can forbid RTTY operation without an advanced license.

We feel it very unfair to take something away, then say you can have it back if you work hard. Much hard work was spent getting the original license, and certain privileges that went with it and I am sure that any amateur who got a set going on RTTY has improved his knowledge far more than memorizing another examination that he does not need. Fortunately we have hams gifted in electronics who develop and write about new ideas and equipment but also fortunately we have even more hams from all walks of life that operate nets, work in civil defense, make friends all over the world, operate field day and use ham radio as relaxation from other day to day occupations. We have never noticed any better or worse operating habits in relation to the class of license held. There are good and bad in all classes. It seems to us that experience on the air promotes better hams than knowing the difference between an "or" gate and an "an" gate. There will always be qualified technical experimenters to develop the art why not let the others practice it?

Personally, we bought and paid for our house, lived in it for 20 years and tried to keep it up at all times. I am afraid we would be very unhappy to have someone tell us we would have to move unless we knew the size of the nails and the studding in the ceiling. In effect, this is what the new proposal as originally stated does to the General and Technician license holder and RTTY.

***

The shipment of binders arrived several weeks ago and strangely seem to be selling better at the new $4.00 price than before. Also the $2.00 classified rate brings in a few more dollars to help pay the large postal increase. Funny thing we could take the magazine across the river to Windsor Canada and mail it for 25% less. It would save about $70.00 an issue. Too much trouble, but our new postal system in this country can help cut inflation by forgetting about new increases.

***

C.B. Goodman, a dealer in teleprinter equipment in Chicago for 40 years, sold out, moved west, didn't like it, and is now back in business in Chicago.

BACK ISSUES

New subscriptions and classified ads are cash in advance as we have no method for billing. New subscriptions will be started with the current issue and one back issue, if requested. Please do not ask us to start any further back than this. Back issues - if available - may be ordered at 30¢ each at time of subscription. The JOURNAL is mailed about the 20th of the month preceding the dated month. May and June are a combined issue and July-August is a combined issue.

The ONLY back issues available are listed below. 30¢ each.

1971-JUNE-JULY-SEPT.- [3]
1972-APRIL-MAY-SEPT.OCT.-NOV.-DEC.-[6]
1973- COMPLETE- [10]
1974-JAN.-FEB.-SEPT.-NOV.-DEC. [5]
1975-JAN.-Feb.

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RTTY JOURNAL
Box 837
Royal Oak, Mich. 48068
Editor & Publisher 'Dusty' Dunn W8CQ

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RTTY Etiquette

CONTINUED FROM PAGE 15

CQ Tapes:
Keep these short -- say to five lines. Put in your call, name and location, Run it once and listen and run it again if necessary. By all means, don't make a tape loop, put it on and then go mow the lawn, coming back ten minutes later to see if you have a response. Any potential responding stations have probably given up in disgust. If operating on a net frequency, a mere announcement of your presence is generally sufficient This also applies to operation through VHF repeaters. When responding to a call or entering an existing QSO, zero the frequency of the other station.

Brag Tapes:
Make and run these if you feel you must, and for those times when asked about your gear. But put them in paragraph form and eliminate all those little dots, spaces or dashes across the page. Don't detail all the gear in your shack, all you have ever owned or that which you may not be using at the time. Few operators are interested in the fact that you measure voltage with a Hewlett-Packard vacuum tube voltmeter obtained through your MARS activity twenty years ago.

Station Identification:
The rules do not require identification in RTTY, only in CW at the beginning and end of each transmission and at ten minute intervals. It is unnecessary to type out the calls of all the stations who may be in one QSO or to repeat these calls (or your own) several times at the beginning and end of every transmission. Do this only when it may be helpful to others. With rapid breaks back and forth between two stations, eliminate it entirely. The use of "BK" may be helpful, but usually the dropping of your carrier will indicate a turn over. Use terms such as "ES THE GRP" or "ET AL" (meaning "and others") when appropriate. You also need not tell others that you know the rules by typing such expressions as "CW ID FOLLOWS" or the like. Just put the CW identification in where they belong and forget it.

Equipment and Maintenance:
Don't try to force others to listen to or to try to print a signal from a poorly set-up station or improperly aligned gear. Eliminate those haywired arrangements; set your tones and shift accurately; get rid of the bias on your signal; and keep your contacts clean. If your transmitter drifts, at least let it warm up for a while or, better yet, fix it or use it for a boat anchor.

Abbreviations:
Do use the accepted "Q" signals when appropriate. But don't forget what you have punctuation on your keyboard and, for example, an exclamation point says the same as "HI HI HI" and a colon means that something is to follow. The salutation "73" is quite proper but "73's" means "BEST WISHES", and one "73" is enough.

The Other Station's Machine:
All machines are not alike. Some downshift on space and others do not. Some have non-overline features. Some interchange the location of the bell and apostrophe. Unless you know the particular characteristics of the machine at a receiving station, consider these differences that may exist and format your typing and tapes accordingly. Don't send a picture tape to a station using a video read-out device. Those using such devices should also remember that the mechanical printers do not nicely form lines with only 50 or so characters. Since some of the machines are very old and tired, put in at least three functions between lines, normally a carriage return, line feed and letters. This will enable these machines to get back to the start of a new line.

General Courtesy:
Listen a bit between transmissions for any new or breaking stations. In a QSO with many stations at one time, give everyone a chance to transmit and, if necessary, arrange for a station who may be able to hear all others to act as a sort of net control. When in a large group, keep your transmissions short. Let a guy go when he wants or has to QRT. Turn it to someone else when you wish to QRX, don't just leave your mark tone on when you have to run to the bathroom or go get that cup of coffee. Do listen before first transmitting, hopefully to eliminate interference, and remember that, while you may not be able to hear adjacent signals, the bandpass of most HF receivers is in the order of 2-3 KHZ. Keep in mind the frequencies used by nets, for autostart or for bulletins and, unless you are participating, try to keep these frequencies clear. Defer to the bulletin stations, even though you may have been there first, for the most good for the most operators.

While all may not agree with these comments and suggestions, it is sincerely hoped that they may contribute to our operating efficiency and pleasure in the RTTY mode.

***

CLASSIFIED ADS-- 30 words $2. Additional words 4¢ ea.

Cash with copy, Deadline 1st of Month.

Update your RTTY station with Hale Electronics' new solid-state character generator, Model CG-256. Uses PROM to generate 32 character RTTY message (5-level, Baudot, 2-bit stop), or 256-bit cw message. Just the thing for WRU or CW ident. Directly compatible with ST-6. Slight modification required on ST-5. Loop compatible with external reed relay. May be remotely controlled. Available in kit form (with PROM programmed to your specs.), wired and tested model, or PC board only. QSL card or letter brings full descriptive info and prices. Inquire today. Hale Electronics, P.O. Box 682, Cape Girardeau, Mo. 63701.

MORE RTTY! ONLY HAM RADIO MAGAZINE consistently brings you more RTTY articles and better RTTY articles than any other general amateur magazine. You need RTTY Journal, but you need HAM RADIO also. $7.00 per year, $14.00 for 3 years. Ham Radio, Greenville, NH 03048.

OA-5 SOLID-STATE TU. See February and September issues of "RTTY Journal." Drilled and plated boards, $15.00; board with parts, $100.00; complete unit, ready for air, $210.00. FOB. WA8ETX, Ken Simpson, 3700 Mountview, Alliance, Ohio 44601.

WANTED: MODEL 33 & 35 EQUIPMENT. Complete or partial units, any quantity. Will pay shipping. Terminal Systems, Inc., 11300 Hartland St., North Hollywood, CA 91605 (213) 769-6772.

RTTY VIDEO DISPLAY UNIT: 1000 characters, plugs into loop or logic circuits. ASCII or BAUDOT available. Works with any TV set. Leland Associates, 18704 Glastonbury Rd., Detroit, MI 48219

SALE: MODEL 28 TYPING REPERF, type 315/UG code LPR-35, or TT 317/UG code LPR-37, tape data 11/16" wide, Chadless or fully perforated; Good $25.00 each. Model 28 Transmitter-Distributor type TT 334/UG code LXB-9, Good $25.00 each. Tuning forks 96.19 VPS. or 120 VPS. Unused $2.00 each. Mite PD/82U 115VAC, 60 cy. Synchronous motor with connector Unused $18.00 each. Reader, High Speed Ferranti model Mark II or III Good $15.00. TT Socket wrench 5/16" with 12" long handle. 75¢. 60 WPM set gears for Model 14 TD 1800 RPM Unused $4.75. . . Model 14, 15, and 19 Machines available, Also LORENZ LO-15 ASR and KSR (IT'S A REAL BEAUTY). Send us a list of your needs. ATLANTIC SURPLUS SALES CO. 1902 Mermaid Ave. Brooklyn New York 11224 Tel. (212) 266-2629.

HAL COMMUNICATIONS CORP: HEADQUARTERS for MAINLINE Solid State RTTY Equipment. In demodulators, choose from the incomparable ST-6 or, for a low cost beginning in RTTY, the ST-5. Tailor either to your requirements by selecting the 425 Hz press discriminator, the AK-1 AFSK oscillator, and table or rack mount cabinets for the ST-6, or the AK-1 AFSK and the ST-5/AS autostart for the ST-5. Full details available in our current catalog. Charge your purchase to your BankAmericard or Master Charge account. HAL Communications Corp., Box 365RJ, Urbana, Illinois 61801. Phone 217-367-7373

SELL OR TRADE--USM-105A (HP-160B) dual trace (15 Mh) $250; CV-157 Collins autotuning SSB-FSK Converter 455 IF $250; DXD-4, Sync, 60 and 100 gears, hood $300; AN/SRR-13A 2-32 Rcvr AM, SSB, CW, FSK $125; R-390A in cabinet $415; W.U. 6-level ticker $100; SBE's SB-34 Transceiver, mike, book, AC and DC cables $225; CV-89A TU $75. ALL VERY NICE. ALL PICKUP ONLY SAN DIEGO. W6CRG 11007 Explorer Road, La Mesa, Calif. 92041.

NEWS-NEWS-NEWS - Amateur Radio's Newspaper, "Worldradio", Trial subscription-Two issues for one dollar. "Worldradio" 2509-F Donner Way, Sacramento, Calif. 95818.

WANTED: CV-483/URA-17 terminal units. Any condition. UGC-20, 25 or 43 Compact KSR. Mark III keyboard for 28KSR. Hank, W6SKC P.O. Box 338, South Pasadena, Ca. 91030

DAYTON HAMVENTION at HARA Arena April 25, 26, 27, 1975. RTTY Forum scheduled on 27th. Write for information if you have not attended the last two years to HAMVENTION, P.O. Box 44, Dayton, Ohio, 45401.

SALE: MODEL 28 COPYHOLDER TYPE 164024, offset copyholder for a 28 Cabinet type LAC or LAAC etc. unused $5.25; Model 28 Electric paper winder type PW-201 BR 115 V 60 Cy Unused $65.00; Distortion Test Set with Scope Type Stelma TDA-2, 115 V 60 Cy good $38.00; Terminal Unit, Teletype Converter type TH-5 TG unused $49.95; Kleinschmidt allen wrench on 12" long handle for those hard to get at places, Unused $1.00; Distortion Test Set Type TS-2B/TG 115 V good $58.00; Tape, Perforator 11/16 oiled, Red with 2" center hole, Box of 10 Rolls, $3.60 or case of 40 Rolls $9.95; Model 28 LESU units in steel housing Unused $33.00; Model 15 Platen unused $4.50; To speed your order please enclose sufficient postage. ATLANTIC SURPLUS SALES CO. 1902 MERMAID AVE. BROOKLYN, NEW YORK 11224 Tel: 212-266-2629.

HAL COMMUNICATIONS CORP. announces the new RVD-1005 Visual Display Unit, with the features of the proven RVD-1002 and some new features to boot, such as: Automatic CR-LF on space after 34th character (prevents splitting of short words), and speed indicator circuitry which times the incoming signal and causes an LED to light to show which speed switch to select. Loop and low level inputs for compatability with any TU. Combine the RVD-1005 with the DKB-2010 or the RKB-1 for the ultimate in noiseless, reliable, reception and transmission of Baudot coded TTY. BankAmericard and Master Charge accepted. HAL Communications Corp., Box 365RJ, Urbana, Illinois 61801. Phone 217-367-7373.

CIRCUIT BOARDS: CW ID October Jrnl. $8, Frequency Standard February 1974 Ham Radio magazine $8, Digital Clock November 1974 QST $8, RTTY Memory January 1975 Ham Radio magazine $10 -- have obtained a supply of the HGSM Clare relays needed and will reserve one for each Memory circuit board available, add $2 for this relay if ordered with board, $2.50 if ordered later. Last call for counter boards April 1974 RTTY Jrnl, still $10 a set. Have no more AFSK or Digital Autostart boards. All boards high quality G-10 epoxy, plated, but undrilled. Sent postpaid First Class mail in US and Canada only. Bert Kelley, 2307 S. Clark Ave., Tampa, Florida. 33609

TELETYPE, KLEINSCHMIDT, MITE, Gears, manuals, machines, parts, tools, cranks, tuning forks, motors, keytops, pallets, toroids, re-inkers. SASE for list. Typetronics Box 8873, W4NYF, Ft. Lauderdale, Fl. 33310. Wanted: parts Manuals, late machines.

RTTY PICTURE PERF TAPES. Hundreds to choose from; from Rembrandt to Star Trek's USS Enterprise - even Christmas bell music. Error-free, no extra LTRS, FIGS, etc. 11/16" chad type (fully punched, no lids). Same-day service, postpaid. Send 16¢ in STAMPS for catalog and full details. This is NOT an illustrated catalog. Joe Dickens, WA9UGE, 801 S. Dodson, Urbana IL 68101. SEE YOU AT DAYTON BOOTH.

CLASSIFIED ADS-

UART's AY-5-1013 NEW GENERAL INSTRUMENTS. $10.00 each or 10 for $85.00, all postpaid. Martin Geisler, WA6TIC, 11300 Hartland St., North Hollywood, Calif., 91605

NS-1 PLL DEMODULATOR (Oct. '74 Journal) complete unit wired, tested $25.95 ppd. less switch, meter, power supply. Board only undrilled $4.75. Nat Stinnette Electronics, Box 1043, Tavares, FL 32778.

CHICAGO AREA OPERATORS, EXPERT REPAIR work performed at reasonable prices. Cleaning and lubrication; printers $11.00, Keyboards $6.00, Reperfs, $8.00, Repair work, any model teletype apparatus, $17.00 plus parts. Phone (312) 392-2358. Contact Neil.

UT-4 FULL SEMI-CONDUCTOR KIT (50 available) economy version with 555 clocks and precision resistor set with hook-up for "simple" D/A converter status indicator, $45.00 postpaid; with 300 Molex pins, $48.00. Contains UART (TMS-6011NC or GI-5-AY-1093, specify), two Fairchild 33512 FIFO's, 741 op-amp, diodes, three NPN's, eleven TTL's, two NE555V with .01 polystyrene timing caps, seven "binary" precision resistors. With single FIFO deduct $12.00. All prime material, no surplus. See Jan and Feb ads for Motorola D/A chip and other items separately, except UART's. Because of uncertain pricing and deliveries, UART's furnished as available on "cost-plus" basis and may be lower. Rebates made if applicable. Peter Bertelli, W6KS, 5262 Yost Place, San Diego, CA. 92109. 7140274-7060

SALE - MODEL 19 MACHINE $95 complete with T.D. and table. Model 19 less cover no T D or table $50. Klienschmidt with 60 and 100 speed gears $55. Model 15 $45. Kleinschmidt 60 speed $35. W3EAG phone 215-489-7039 Collegeville, PA.

TECH MANUALS -- $6.50 each: TT-63A/FGC, CV-591A/URR following manuals $8.50 each: TT-47/48, R-388/URR, USM-50, 51J4, FR114/U; following manuals $10.00 each: R390A/URR, SRR-11, 12, 13, USM-32, URR-35C. Special manuals (Limited quantity): TM-03315-15 TGC-14/14A $10, Navships 95898 TT-298A/B, TT-299A/B $12.50, Navships 0967-170-8010 UGC-38, 40, 41 $12.50. Model 14 TD manuals $2.50 each. Thousands more in stock. Send 50¢ (coin) for large list. W3IHD, 7218 Roanne Drive, Washington DC 20021

UART CIRCUIT BOARDS $3.50, dual clocks with clock and input-output switching for receive-transmit use. Pos 5, neg 5, neg 12 volt power supply board $3.00. AFSK board uses 8038 and buffer amp $3.50. TTL CW I-D board $3.50. Future plans for UART-FIFO board, PLL T.U. board, non-overline-auto CR-LF board and a 6 I.C. electronic stunt box for selcal and complete station control from the keyboard. For more info write: WA4RZY Larry Waldron 131 University Ave. Lexington, KY 40503

HAL COMMUNICATIONS CORP. will show THE line of electronic TTY equipment at Muskegon and Dayton. Phone your orders for pick-up at the show. We'll look forward to seeing you there.. Phone 217-367-7373.

TELETYPE EQUIPMENT & ELECTRONICS of all kinds. Write C.B. Goodman, 5454 South Shore Dr., Chicago, IL. 60615 Phone (312) 752-1000 exten. 516.

TELETYPE EQUIPMENT FOR SALE: Models 28-14-15. Solid state terminal units. 3 shifts - $35.00. Model 28 parts and machines wanted. K8JOF, Royal Oak, MI. 48073. (313) 398-5922.

FOR SALE - KLEINSCHMIDT 311, new with manuals and schematics $150; 3JP1 CRT, shield and bezel $8; Both FOB Stamford. Wanted Collins 70E-8 PTO. Charles Copp, W1VZ, 182 Skyview Drive, Stamford, CT 06902

UT-4 -- PC BOARDS, KITS, CUSTOM CABINETS, write for details. Also AK-2 kit, by Irv Hoff, $19.95 PP. Electronic Development Inc. PO Box 951, Salem, OR. 97380. (503) 399-9660

VIDEO RTTY DISPLAY UNIT; VIDITYPE Model 872 60 thru 100 WPM. Works on any TV and TU WA8NSH/7, 7802 W. Weldon, Phoenix, AZ. 85033

HAL COMMUNICATIONS CORP. has moved to bigger facilities to serve you better. Our address is the same, but please make note of our new phone number 217-367-7373.

NEW MOD KITS TO CONVERT M28 sprocket-feed to friction-feed, $45.00. New M28 LESU loop supplies, $10.00. M28 Stand-alone TD with cover, motor, $125. Model 15-19 friction-feed conversion, $13.00. M28 typeboxes, $20.00, WX, COMM, or Fractions. 28ASR motors, $25.00. M19 covers, $15.00. M15-19 bases, $7.00. Complete M28 machines, SASE for complete list & Prices. Motorola T53GKT, mint, $225.00. Lawrence R. Pfleger, P.O. Box 21956, Milwaukee, WI 53221.

HAL COMMUNICATIONS CORP. announces the DKB-2010 Dual Mode Keyboard. Provides flawless transmission of RTTY and Morse Code with standard 3 character buffer and optional 64 or 128 key buffer. Call letter identifier and "Quick Brown Fox" sequence standard. Write for detailed spec sheet. HAL COMMUNICATIONS CORP., Box 365RJ, Urbana, ILL. 61801 Phone 217-367-7373

WANT: PRE-1974 RTTY JOURNALS, Kleinschmidt ADS-321 or AN/FGC-140 circuit boards. TV-2 tube tester. Joe Ottinger, 106 Sheridan Ct. Leavenworth, KS. 66048, (913) 651-5832

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Dayton Hamvention

Dayton Hamfest April 25-27. The RTTY forum will be on Sunday morning April 27. Keith Petersen, W8SDZ is the moderator and a very interesting program is being arranged. RTTY JOURNAL hospitality suite Friday and Saturday nites, South Room of the Imperial North Motel.

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